throughout that Province. At the time of writing this article, 10 days after the storm struck Samar, telegraphic communication has not been restored as yet to the eastern part of the island, where the lowest barometric minimum is supposed to have been recorded and the greatest damage done by the rains, winds, and sea waves. The barometric minima recorded at Catbalogan and Calbayog were, respectively: 714.85 mm. (28.14 inches) at 6:46 p. m. of the 16th, and 720.13 mm. (28.35 inches) at 8:33 p. m. of the 16th. The position of the center at 6 p. m. of the 16th was 124° 55′ longitude E. and 11° 50′ latitude N.

After crossing the island of Samar the typhoon began to incline to NW. and NNW., the center being situated at 2 p. m. of the 17th to the NE. of Romblon in about 122° 30′ longitude E. and 13° 20′ latitude N. At 6 a. m. of the 18th the center passed about 50 miles to the east of Manila along the eastern coast of Luzon, moving N. by W. or NNW. Then, in the afternoon of the same day, the typhoon inclined again westward and entered the China Sea during the night of the 18th to 19th not far from 16° latitude N.

The storm had lost much of its intensity after it traversed Samar, it being only a shallow depression when it crossed Luzon to the north of Manila. Yet considerable damage was done in many of the Provinces near the center by heavy rains and consequent floods. In Manila the total daily rainfall for the 18th and 19th was 278.5 mm. (10.96 inches) and 243.7 mm. (9.60 inches), respectively, and the flood, which was the worst of this year, caused the water to be 1½ meters high in some of the lower portions of the city.

Once in the China Sea the depression or typhoon, after moving for about one day almost due west, remained almost stationary or moved very slowly for two days about 150 miles to the west of central Luzon, at the same time inclining again to the N. Finally, on the 21st, it recurved NE. and ENE., passing through the Balintang Channel on the 22d and entering again in the Pacific in the afternoon or evening of the same day.

DETAILS OF THE WEATHER IN THE UNITED STATES.

GENERAL CONDITIONS.

ALFRED J. HENRY.

The month, as a whole, presented no sharp extremes or pronounced departures from normal conditions; it was dry over the greater part of the area, especially in Pacific Coast States and also east of the Mississippi and south of the Ohio (see the inset on Chart IV). Due to the eastward movement of several shallow barometric depressions along the northern border, the temperature was above the average mainly in northern States (see Chart III). The usual details follow.

CYCLONES AND ANTICYCLONES.

By W. P. DAY.

There was an increase in the number of cyclones and anticyclones charted as compared with the preceding month. This is a normal tendency due to increased temperature gradients between polar and equatorial zones and a corresponding increase in the rapidity of air interchange between these regions. However, the low-pressure areas or cyclones with one or two exceptions were not important as storms, and the high-pressure areas, being largely of the north Pacific type, did not cause any important depressions of the temperature.

FREE-AIR SUMMARY.

By L. T. SAMUELS, Meteorologist.

A noticeable feature of the mean free-air temperatures for the month was the general continuation of like departures both in sign and magnitude from the surface to the highest altitudes reached by the kites. (See Table 1.) Ordinarily the departures become appreciably smaller with increasing altitude, with a tendency to approach zero. Climatological Chart III shows a striking contrast between large positive departures in the northern part of the country and negative departures in the South. Free-air departures are found to conform to these to a large extent.

Relative humidities averaged very close to their normals for all stations and levels.

Vapor-pressure departures followed, in general, those for temperature except at Ellendale, where a very considerable deficiency for the month was found. With the large positive temperature departures found at this station there would ordinarily be expected a considerable excess in the mean vapor pressures. However, this was not the case, there being only small positive departures from the surface to 1,500 m., above which they were negative. In this connection it is interesting to note that only 0.23 of an inch of precipitation occurred during the month, the smallest amount for November since the establishment of the station.

In Table 2 are shown the resultant wind directions and velocities for the month. Generally good agreement is found between the resultant direction as compared with the normals and the corresponding monthly temperature departure, that is, a positive temperature departure is usually accompanied by a more southerly or less northerly wind component than normally, and vice versa.

Resultant winds for the month based on afternoon pilot-balloon observations made at 10 regular Weather Bureau stations, in addition to six regular aerological stations, make possible the determination of the resultant atmospheric drift over the country as a whole. However, as yet, large sections, such as the Pacific coast and the plateau region, are inadequately represented by single stations, the Army and Navy stations not taking regular observations at this time of the year, and only comparatively low altitudes are obtained. At 1,000 m. above the surface these showed a westerly drift east of the Rocky Mountains except at Key West, south of west over New England and the Southern Plains States, north of west over the Missouri Valley, Denver, and Middle Atlantic States, due west over the Lake region and Memphis, east of north over San Francisco, north of east over Key West, and due east over San Juan and Curacao, Danish West Indies (the latter station being maintained through cooperation with the Dutch Government and located in latitude 12° N., longitude 69° W.). At 2,000 m. the direction was north of west at all mainland stations except Burlington, where it remained S. 57° W. and due east at San Juan and south of east at Curacao. At 4,000 m. this continued, with the exception of San Francisco, which became east of north, San Juan at this level also being slightly north of west, while Curacao remained south of east. Practically no change was found at 5,000 m. except at Curacao, which became